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HELMINTHOLOGICAL ABSTRACTS

incorporating
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For the Year 1947.



COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

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March, 1948

COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

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HELMINTHOLOGICAL ABSTRACTS

Vol. XVI, Parts I & 2

1947

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PHENOTHIAZINE 1942-46

A Review and Bibliography

by

J. Tweedale Edwards, M.R.C.V.S.

and

The Imperial Bureau of Agricultural Parasitology (Helminthology)

November, 1947. Price 4s. od. post free.

in continuation of:

THE PRESENT POSITION OF PHENOTHIAZINE AS AN ANTHELMINTIC

by

D. G. Davey, Ph.D., M.Sc. & J. R. M. Innes, D.Sc., M.R.C.V.S., F.R.S.E.

issued by The Imperial Bureau of Animal Health

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The Imperial Bureau of Agricultural Parasitology (Helminthology)

August, 1942

HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1947

Vol. XVI, Parts 1 & 2.

1—Advisory Leaflet. Ministry of Agriculture and Fisheries. London.

- a. ANON., 1947.—“Stem and bulb eelworm. Horticultural crops.” No. 175, 4 pp. [Revision of leaflet published in 1942.]

2—American Journal of Clinical Pathology.

- a. FRISCH, A. W., WHIMS, C. B. & OPPENHEIM, J. M., 1947.—“Intradermal reactions in trichinosis.” 17 (1), 16–23.
b. FRISCH, A. W., WHIMS, C. B. & OPPENHEIM, J. M., 1947.—“Complement-fixation and precipitin tests in trichinosis.” 17 (1), 24–28.
c. FRISCH, A. W., WHIMS, C. B. & OPPENHEIM, J. M., 1947.—“Immunologic reactions in trichinosis with purified antigens.” 17 (1), 29–34.

(2a) 42–50% of over 200 German prisoners-of-war, involved in a mild epidemic of trichiniasis, gave immediate skin responses to intradermal tests with an alkaline saline extract of trichina larvae placed in boiling water to remove heat-precipitable material. The skin reaction was reliable if a typical wheal was produced, but different lots of extract prepared by the methods commonly adopted showed extreme variability in the same individuals. The introduction of a standard preparation of constant composition and reactivity would appear to be very desirable.

R.T.L.

(2b) The use of the complement-fixation test has been investigated on 200 patients in a mild epidemic of trichiniasis in a prisoner-of-war camp. Three weeks after the onset of acute symptoms, 37% gave positive reactions; 12% of a second group of suspected cases without symptoms gave positive results. Fewer positives were obtained in the later stages of the disease. The precipitation test was less successful. The authors suggest that much work is necessary with a view to standardizing serological techniques and improving the sensitivity of the tests.

P.A.C.

(2c) Frisch et al. have experimental evidence suggesting that the active component of an antigen from *Trichinella spiralis* is heat stable and can be precipitated by alcohol and acetone. It should now be possible to produce a standardized antigen by alternate solution in saline and precipitation by alcohol or acetone until a final precipitate is obtained which can be dried over ether and weighed.

P.A.C.

3—American Journal of Diseases of Children.

- a. PERLINGIERO, J. G. & GYÖRGY, P., 1947.—“Chronic eosinophilia. Report of a case with necrosis of the liver, pulmonary infiltrations, anemia and *Ascaris* infestation.” 73 (1), 34–43.

4—American Journal of Hygiene.

- a. WEINMAN, D. & McALLISTER, J., 1947.—“Prolonged storage of human pathogenic protozoa with conservation of virulence: observations on the storage of helminths and leptospiras.” 45 (1), 102–121.
b. WRIGHT, W. H., BOZICEVICH, J., BRADY, F. J. & BAUMÁN, P. M., 1947.—“The diagnosis of schistosomiasis japonica. V. The diagnosis of schistosomiasis japonica by means of intradermal and serological tests.” 45 (2), 150–163.
c. WRIGHT, W. H., McMULLEN, D. B., FAUST, E. C. & BAUMAN, P. M., 1947.—“The epidemiology of schistosomiasis japonica in the Philippine Islands and Japan. II. Surveys for schistosomiasis japonica on Mindanao, Philippine Islands.” 45 (2), 164–184.
d. LOUGHLIN, E. H. & STOLL, N. R., 1947.—“Fomite-borne ancylostomiasis.” 45 (2), 191–203.

- e. McMULLEN, D. B., 1947.—"The control of schistosomiasis japonica. I. Observations on the habits, ecology and life cycle of *Oncomelania quadrasi*, the molluscan intermediate host of *Schistosoma japonicum* in the Philippine Islands." 45 (3), 259-273.
- f. McMULLEN, D. B. & GRAHAM, O. H., 1947.—"The control of schistosomiasis japonica. II. Studies on the control of *Oncomelania quadrasi*, the molluscan intermediate host of *Schistosoma japonicum* in the Philippine Islands." 45 (3), 274-293.
- g. McMULLEN, D. B. & INGALLS, J. W., 1947.—"The control of schistosomiasis japonica. IV. The effect of various chemicals on the cercariae of *Schistosoma japonicum*." 45 (3), 294-298.
- h. WARREN, V. G., 1947.—"Studies on filariasis. V. Serological relationships between antigenic extracts of four nematodes." 45 (3), 299-301.

(4a) The microfilariae of *Wuchereria bancrofti*, *Dirofilaria immitis*, *Litomosoides carinii* and the infective larvae of *Ancylostoma caninum* and *Strongyloides stimaie* were successfully revived after frozen storage at -70°C ., but muscle infected with *Trichinella spiralis* failed to infect rats after storage for 80 days at -70°C . and quick thawing at 40°C . R.T.L.

(4b) Wright et al. have examined the usefulness of the intradermal test in the diagnosis of schistosomiasis japonica. The antigen was made from *S. mansoni* adults and gave positive results in about 75% of certain known chronic cases but no positives in others known to have been exposed to infestation 4-5 months earlier. In another series, 83.7% positive results were obtained from a group of patients showing ova in the stools. Positives were obtained in a number of people not known to be affected although some of them had a history of other helminth infestations and various other diseases. P.A.C.

(4c) An account, supported by maps and tables, is given of the results of surveys for endemic foci of *Schistosoma japonicum* on Mindanao, Philippine Islands. R.T.L.

(4d) Examination of shore-based naval personnel who contracted hookworm infection while handling hospital bed-clothes, which had lain unwashed and damp for over a week, led to the demonstration that enormous numbers of infective larvae could develop in clothing soiled by infected faeces. This possibility may explain the origin of numerous cases of severe and sometimes fatal hookworm disease in young children and infants. Infective larvae were found to migrate laterally for over 8 inches on damp cotton blankets. In areas or seasons of sub-tropical and tropical temperatures with heavy rainfall and high humidity, infected bed-clothes and garments may be a hitherto overlooked factor in the epidemiology of hookworm disease. R.T.L.

(4e) McMullen gives an account of the development of *Oncomelania quadrasi* which under ideal conditions reaches maturity in 4-5 months. The adult lives for at least five months and the life span probably exceeds one year. The youngest infected snails were 10-14 weeks old and 3 mm. in length. The development of *Schistosoma japonicum* in this host requires 8-11 weeks. There is evidence that the rate of infection is reduced in the dry season. Apparently most of the snails become infected in the Philippines in the rainy season in October to November. January to March are probably the months of maximum danger there. R.T.L.

(4f) Chemical attack on *Oncomelania quadrasi* is complicated by the fact that it is an amphibious operculate snail. The results of experiments on these snails with 19 different substances are described and discussed and are summarized in three tables. The chemicals were applied in crystalline, granular or dust form, or as sprays. The eggs proved more resistant than the snails. Substances considered as of possible control value are as follows. (i) Copper sulphate, 10 p.p.m., killed 94% in 24 hours but snails easily crawled out and escaped. 50% CuSO_4 in talc dusted on a plot killed 31% in four days. Heavy applications of various CuSO_4 mixtures killed 84-97% snails by the 8th day. (ii) Copper carbonate proved very effective, 93-100% of the snails being killed by various applications. The lethal threshold was about 250 lb. per acre. (iii) Copper guanylurea used as a dust killed up to 92%, and as a spray killed 75-99%. (iv) Paris green killed all snails in 24 hours in the laboratory, or after heavy application to a small natural plot. The powder was used pure, or diluted with lime which did not affect the killing power. Application of 250 lb. per acre killed a high percentage of snails. Sprays gave complete kills in 8 days as did dusting of pond plots. (v) Calcium arsenate in the form of

a fine powder was applied as a dust or spray. Significant kills appeared at 500 lb. per acre, and an average kill of 85% was reached. 99% were killed in a pond plot by using 485 lb. per acre. Powder was as effective as spray. (vi) Calcium cyanamide, 500 lb. per acre, killed 63-96%. (vii) Dinitro-*o*-cyclohexylphenol, at an application rate of 100 lb. per acre, gave an average kill of 96% after 8 days: 100% were killed at 270 lb. per acre. It was effective both dry and as a spray. (viii) Dicyclohexylamine salt of dinitro-*o*-cyclohexylphenol (K604) as a dusting powder gave up to 99% kill after 4 days. At 75 lb. per acre kills ranged from 70-100%. The effects of these various substances on the vegetation is noted. The dry season is considered the best time for killing the snails, as during this season they are mostly in the moist soil habitat. Dusting, by hand or by aeroplane, will probably prove the most effective method. The dinitro compounds kill in smaller quantities than the other substances and have a good residual effect. Dinitro-2-butylphenol is considered too toxic and dangerous in its present form, though it is highly effective. The advantage of calcium cyanamide, which is cheap and acts as a fertilizer, is mentioned. Cost, an important factor considered in some detail, varies with the chemicals tested from \$0.54 to \$5.40 per 1,000 sq. ft. S.G.C.

(4g) McMullen & Ingalls point out that unless a molluscicide is also a cercaricide, infected waters should be avoided for at least 48 hours after destruction of snails. Methods and substances of known cercaricidal value are briefly enumerated. Of nine substances tested in solution, Paris green, calcium arsenate, copper carbonate, copper cyanamide, and copper guanylurea had no effect, while copper sulphate, dinitro-2-butylphenol, dinitro-*o*-cyclohexylphenol and its dicyclohexylamine salt, K604, killed 99-100% at concentrations of 100 p.p.m. over periods of 3-15 minutes. The last two killed 97-100% of cercariae in one minute. Copper sulphate and dinitro-2-butylphenol had no effect at 10 p.p.m., dinitro-*o*-cyclohexylphenol killed 60% or more at 10 p.p.m., and K604 was nearly as effective at 10 as at 100 p.p.m. As a dusting powder, CC2, a chemical warfare product of secret composition, at 6 lb. per 100 sq. ft. killed 100% after 5 minutes but at 1 lb. per sq. ft. had no effect after 15 minutes. K604 gave 100% kill at 3 lb. per sq. ft. for one minute or 1 lb. per sq. ft. for 15 minutes, while 1 lb. per sq. ft. killed 94% in 5 minutes and $\frac{1}{4}$ lb. per sq. ft. killed 97% in 60 minutes. The most effective cercaricides were CC2 and K604. Applied as a dust at the rate of 2 lb. per unit area K604 has a triple effect, killing cercariae, snails and snail eggs. Its application to rivers above a working site should protect bridge-building parties. S.G.C.

(4h) Warren demonstrates that there is a common antigenic component in *Dirofilaria immitis*, *Wuchereria bancrofti*, *Litomosoides carinii* and *Trichinella spiralis*. This probably accounts for some of the false positive responses obtained when using the intradermal test for diagnosis of filariasis: such patients may have been exposed to other nematodes possessing this group antigen. P.A.C.

5—American Journal of Tropical Medicine.

- a. SIMMONS, J. S., 1947.—"Tropical medicine and the challenge of global war." 27 (1), 1-9.
- b. WELLER, T. H., 1947.—"The diagnosis of *Schistosoma mansoni* infections. Note on the use of a rectal scraper." 27 (1), 41-44.
- c. PALMER, E. D., 1947.—"Results of certain studies on the stomach in schistosomiasis japonica." 27 (1), 45-49.
- d. BOZICEVICH, J., DONOVAN, A., MAZZOTTI, L., DIAZ A., F. & PADILLA, E., 1947.—"Intradermal and complement fixation reactions elicited by various antigens in persons infected with *Onchocerca volvulus*." 27 (1), 51-62.
- e. MARKELL, E. K., MULLINGER, P. E. & SCHNEIDER, D. J., 1947.—"Intestinal parasitic infections in naval personnel." 27 (1), 63-65.
- f. DORRANCE, G. M. & BRANSFIELD, J. W., 1947.—"The evaluation of the surgical treatment of recurrent echinococcal cysts of the liver followed by deep X-ray therapy." 27 (1), 77.

(5a) The tropical diseases contracted in the U.S. Army include 2,151 cases of filariasis and 1,636 of schistosomiasis which were admitted to hospital. R.T.L.

(5b) A three-grooved rectal scraper is described for use in the diagnosis of *Schistosoma mansoni* infections. When after insertion into the rectal sphincter this is swung round, rotated and withdrawn, the grooves collect mucus and faeces for subsequent microscopical examination for eggs. 125 patients were examined in six hours by a team consisting of a doctor, two microscopists and a laboratory assistant. Its efficiency is 60% as compared with 76% by the acid-Triton-NE-ether centrifugation technique. R.T.L.

(5c) By gastroscopy, X-ray examination of the stomach and microscopical examination of its contents, Palmer failed to obtain evidence in seven patients infected with *Schistosoma japonicum* that the worms invaded the upper splenic vessels, at least in early and light infections. R.T.L.

(5d) Bozicevich et al. have examined the efficiency of the intradermal reaction and of the complement-fixation test in suspected cases of *Onchocerca volvulus* infestation using antigens made from *O. volvulus*, *Dirofilaria immitis*, *Setaria equina* and *Litomosoides carinii*. In both tests *O. volvulus* antigen was the most specific while *D. immitis* antigen was the next most satisfactory. However, there were false positives with patients who harboured other helminth parasites. Antigen from *O. volvulus* is also more sensitive than the others, working satisfactorily in high dilution. P.A.C.

(5e) The percentages of intestinal parasitism found by faecal examination in 1,153 U.S. Naval and Marine personnel are tabulated. R.T.L.

6—American Journal of Veterinary Research.

- a. SEGHETTI, L. & MARSH, H., 1947.—“Experimental treatment of trichostrongylosis in sheep with phenothiazine.” 8 (27), 186–191.

(6a) In Montana *Trichostrongylus* species are probably responsible for more clinical parasitism than any other intestinal nematodes. Phenothiazine in a dose of 37.5 gm. for 95 lb. ram lambs was effective in controlling trichostrongylosis where conditions were not favourable to reinfection, i.e. when sheep were removed from infected pastures and put on a hay and grain ration. The increased weight and quality of the treated lambs more than paid for the cost of treatment. R.T.L.

7—Annals of Tropical Medicine and Parasitology.

- a. WATSON, J. M., 1947.—“A modification of the zinc sulphate centrifugal flotation technique for the concentration of helminth ova and protozoan cysts in faeces.” 41 (1), 43–45.
b. THOMSON, W. E. F., 1947.—“Nematodes in tsetse.” 41 (1), 164.

(7a) Watson's modification of the zinc sulphate centrifugal flotation technique for the concentration of helminth ova and protozoan cysts in faeces consists principally in the use of a cover-slip slightly larger than the glass centrifuge tube and smeared lightly with Mayer's egg albumen. The albumen acts as a seal between the cover-slip and the ground top of the centrifuge tube. Cysts and ova tend to adhere to the sticky under-surface of the cover-slip which readily remains in position during centrifuging. J.W.G.L.

(7b) In Tanganyika Thomson found 3 examples of *Mermis* sp. during a dissection of 1,500 *Glossina morsitans* collected during the wet season. The average length was 79 mm. R.T.L.

8—Archives of Internal Medicine.

- a. TILLMAN, A. J. B., 1947.—“Schistosomiasis japonica with cerebral manifestations: report of seven cases.” 79 (1), 36–61.
b. LIPPINCOTT, S. W., PADDOCK, F. K., RHEES, M. C., HESSELBROCK, W. B. & ELLERBROOK, L. D., 1947.—“Tests of liver function in schistosomiasis japonica with particular reference to antimony treatment and with report of two autopsies.” 79 (1), 62–76.

(8a) Detailed case reports are given of seven U.S. soldiers who exhibited cerebral manifestations due to schistosomiasis japonica contracted during the Pacific Campaign. Residual symptoms involving the pyramidal and extrapyramidal tract and cortex were present three months after the onset of the cerebral disturbances.
R.T.L.

(8b) The pathological lesions observed at autopsy in two patients in a group of 481 with schistosomiasis japonica are presented together with the results of serial tests of hepatic function done before, during and after antimony treatment in a large number of these patients. The lesions consisted of minute abscesses or fibrotic nodules in the large and small intestine and in the liver. There was no indication that at this stage the damage to the liver was sufficient to impair its function. Repeated bromsulphalein tests and serum bilirubin determinations showed a definitely increased incidence of mild abnormalities towards the end of, and after, treatment with trivalent antimony compounds. The evidence suggested that antimony treatment has a minor direct or indirect effect on the liver.
J.J.C.B.

9—Australian Veterinary Journal.

- a. ROBERTS, F. H. S., 1947.—“The efficiency of sodium fluoride as an anthelmintic for swine.” 23 (4), 82–90.

(9a) Extensive trials with commercial sodium fluoride as an anthelmintic in the pig are described by Roberts. Dosing was carried out by administration in the food for one day. Dose rates of 0.1–0.25 gm. per lb. body-weight were highly efficient against *Ascaris*, less efficient against stomach worms (*Ascarops* and *Physocephalus*) and nodular worms, and ineffective against *Acanthocephala* and *Trichuris*. Doses of 0.4–0.6 gm. per lb. body-weight produced toxic symptoms but no deaths occurred. Multiple doses tended to produce fluorosis.
J.W.G.L.

10—Brasil-Medico.

- a. SILVA, Jr., M. DA, 1947.—“Eliminação de helmintos na sua fase larvária (nota prévia).” 61 (1/2), 2–3.

11—British Journal of Pharmacology and Chemotherapy.

- a. HOLTON, P., 1947.—“The biological estimation of substances used in treating cestode infestations.” 2 (2), 100–107.

(11a) Holton has used *Hymenolepis diminuta* infestations in mice for standardizing drugs used against cestodes. Before treatment with extract of male fern, mice were fed on sugar for 15 hours. The male fern and following purge of magnesium sulphate were given by stomach tube. It was found that the efficiency of the drug could be directly correlated with the logarithm of the dose.
P.A.C.

12—British Medical Journal.

- a. BARBER, F., 1947.—“Surgical aspects of roundworm disease.” Year 1947, 1 (4488), 49–50.
b. GODFREY, L. W., 1947.—“Hepatic hydatid cyst causing suprarenal haemorrhage.” Year 1947, 1 (4491), 181.
c. MADDOX, F. C., 1947.—“Surgical aspects of roundworm disease.” [Correspondence.] Year 1947, 1 (4491), 199.
d. GILLAM, J. F. E., 1947.—“Surgical aspects of roundworm disease.” [Correspondence.] Year 1947, 1 (4493), 272.

(12b) A hydatid cyst of the liver caused 3 attacks of jaundice with associated multiple haemorrhages into the adrenals resulting in collapse, anuria and death. The author states that almost all the cases of hydatid that have occurred in the British Isles “have originated in a small endemic area in South Wales”. He quotes Nancy Howell (1938, Ann. Rept. Chief Med. Off., Min. Hlth, London, p. 192) who says that “in a special investigation into the South Wales cases by the Welsh Board of Health, it was found that the majority of cases occurred in the industrial areas and towns”.
R.T.L.

13—Bulletin de la Société de Pathologie Exotique.

- a. FLOCH, H. & LAJUDIE, P. DE, 1947.—“Trypanosomiase et filarioses humaines d'importation en Guyane française. Taux d'infestation par *A. perstans* chez des tirailleurs sénégalais.” 40 (1/2), 17–22.
- b. FLOCH, H. & LAJUDIE, P. DE, 1947.—“Sur la filariose à *W. bancrofti* en Guyane française. La lymphangite endémique et l'éléphantiasis des pays chauds.” 40 (1/2), 49–63.
- c. MORENAS, L., 1947.—“Fistules à distance et indurations fessières. Séquelles de bilharziose intestinale.” 40 (3/4), 86–88.
- d. HARANT, H., GIROUX, J. & BRAUN-BLANQUET, M., 1947.—“Petite épidémie familiale de taeniasis à *Hymenolepis*.” 40 (3/4), 89–90.
- e. BOIRON, H. & KOERBER, R., 1947.—“Contribution à l'étude de bilharziose urinaire en Afrique occidentale française.” 40 (3/4), 118–124. [Discussion pp. 124–125.]

(13a) [This is a fuller version of a paper which has already appeared in 1945 as Publication No. III, Institut Pasteur de la Guyane et du Territoire de l'Inini, 7 pp. (see Helm. Abs., 14, Pt. 5).]

(13b) The degree of filarial infestation of man in French Guiana ascertained by Floch & Lajudie is compared with that recorded by previous observers. They discuss the relationship of filarial infection to endemic lymphangitis, to tropical elephantiasis, and of endemic lymphangitis to elephantiasis. They conclude that endemic lymphangitis is of microbial origin and that a chronic streptococcal, not filarial, infection is the common factor underlying lymphangitis and elephantiasis.

R.T.L.

(13d) At Bouc-Bel-Air, near Marseilles, where Senegalese and Madagascar troops had been stationed, the authors found several cases of *Hymenolepis nana* infection in a single family. The case report of one of the infected children is given. This case is of interest on account of the associated dysenteriform symptoms and its successful treatment with the essential oil extracted by Braun-Blanquet from *Chenopodium ambrosioides* collected in the neighbourhood of Marseilles.

R.T.L.

(13e) Boiron & Koerber summarize previous records of the occurrence of urinary bilharziasis in French West Africa and tabulate their findings in 580 school children of Medina and in 463 garrison troops at Dakar, of whom 41 were from the Cameroons and 422 from Madagascar. Of these 6.03%, 7.31% and 0.23% respectively showed *Schistosoma haematobium* eggs in the urine although blood could be shown microscopically in 14.82%, 31.7% and 9.94% of those examined. The results obtained in 15 soldiers after 10–15 daily intramuscular injections of pentamidine M & B were inconclusive.

R.T.L.

14—Bulletin of Zoological Nomenclature.

- a. VOGEL, H., 1947.—“On the relative status of the names *Bilharzia* Meckel von Hemsbach, 1856, and *Schistosoma* Weinland, 1858 (Class Trematoda, Order Digenea).” 1 (9), 193–194.
- b. HEMMING, F., 1947.—“On the status of the generic name *Schistosoma* Weinland, 1858 (Class Trematoda, Order Digenea) in relation to Opinion 77.” 1 (9), 195–196.
- c. MANTER, H. W., 1947.—“On the relative merits of the names Dissotrematidae, Gylienchidae, and Opistholebetidae as the name of the family containing the genus *Dissotrema* Goto & Matsudaira, 1918 (Class Trematoda, Order Digenea).” 1 (9), 197–198.

(14a) Vogel raises again the question of the priority of the generic name *Bilharzia* Meckel von Hemsbach, 1856 nec *Bilharzia* Cobbold, 1859 over *Schistosoma* Weinland, 1858. He believes that students of natural science would welcome the restoration of the old name *Bilharzia* and asks the International Commission on Zoological Nomenclature to give the matter its renewed attention.

R.T.L.

(14b) The Secretary of the International Commission on Zoological Nomenclature recognizes that the Commission does not possess the power to place on the Official List of Generic Names in Zoology a name which is invalid under the Code, unless it first uses its plenary powers to validate the name. He admits that in placing *Schistosoma* Weinland, 1858 on the Official List the Commission was unaware of *Bilharzia* Meckel von Hemsbach, 1856 and unwittingly acted *ultra vires*. To clear the error then committed the Commission could delete the invalid name *Schistosoma* Weinland, 1858 from the Official List and insert *Bilharzia* Meckel

von Hemsbach, 1856, or if satisfied that this course would result in greater confusion than uniformity could suppress Meckel von Hemsbach's name and validate *Schistosoma*. Specialists are invited to give the International Commission their views on the preferable course to follow.

R.T.L.

(14c) Manter invites an opinion from the International Commission on Zoological Nomenclature on the following problem: "Considering *Dissotrema* Goto & Matsudaira, 1918, a synonym of *Gyliauchen* Nicoll, 1915 (thus ruling out the name DISSOTREMATIDAE) and considering *Opistholebes* Nicoll, 1915, and *Gyliauchen* Nicoll, 1915, in the same family, is the correct name:—(i) OPISTHOLEBETIDAE Fukui, or (ii) GYLIAUCHENIDAE (Goto & Matsudaira), or (iii) GYLIAUCHENIDAE Ozaki, 1933?"

R.T.L.

15—Canadian Journal of Comparative Medicine.

- a. SAVAGE, A. & ISA, J. M., 1947.—"*Prosthogonimus macrorchis* in Manitoba." 11 (1), 4.
- b. WICKWARE, A. B., 1947.—"The differential blood picture in chickens before and after administration of embryonated eggs of *Heterakis gallinae* with notes on pathogenicity." 11 (3), 78–83. [French summary p. 83.]

(15b) Wickware concludes that infestation with *Heterakis gallinae* is the cause of toxic irritation sufficiently great to result in granulocytopenia. There was a significant increase in the number of polymorphonuclear neutrophils and eosinophilic leucocytes in infested birds, but he was unable to correlate this increase with the degree of infestation. The presence of the caecal worms did not appear to affect the general growth of the birds and he is doubtful if they are the cause of nodular typhlitis, for his control uninfested birds showed the presence of both large and small nodules.

P.A.C.

16—Canadian Journal of Public Health.

- a. KUITUNEN-EKBAUM, E. & WEBSTER, D., 1947.—"Trichinosis in wild rats in Toronto." 38 (2), 76–78.

(16a) In the city of Toronto *Rattus norvegicus* are naturally infected with *Trichinella spiralis* to the extent of 1.4%, thus approximating the incidence of *T. spiralis* in human adults, found in earlier surveys to be 1.6%. It is pointed out that pigs may acquire infection from the contamination of their food with excrement of infected rats or of other infected pigs. The low incidence of trichinosis in pigs in Canada has apparently kept the incidence in rats at a similarly low level.

R.T.L.

17—Canadian Journal of Research. Section D, Zoological Sciences.

- a. MILLER, M. J., 1947.—"Studies on the life history of *Trichocephalus vulpis*, the whipworm of dogs." 25 (1), 1–11.

(17a) In an experimental study, on 11 dogs, of the life-history of *Trichuris vulpis*, Miller has shown that the hatched larvae penetrate the mucous membrane of the upper part of the small intestine within 24 hours after infection and become embedded deeply at the base of the crypts of Lieberkühn within 4 days. About the 10th day the larvae start to migrate out of the mucosa and are then carried passively to the large intestine where they reach maturity. There is no invasion of the blood stream. No moulting of the larvae was observed and there was little increase in size during the first 10 days. The mucous tissues show only slight liquefaction in the vicinity of the developing larvae.

R.T.L.

18—Comptes Rendus (Doklady) de l'Académie des Sciences de l'URSS.

- a. ROMANOVA, N. P., 1947.—"A study of the development cycle of *Echinuria uncinata* Rud., 1819, a nematode parasitic of the stomach of *Natatores*." 55 (4), 371–372.
- b. RUKHLIADEV, D. P., 1947.—"A new *Filaria* from the adipose tissue of *Cervus elaphus* subsp." 55 (6), 563–564.

(18a) Romanova demonstrated experimentally the complete life-cycle of *Echinuria uncinata* which is shown to require an intermediate host, *Daphnia* spp. Larvae of *E. uncinata*

were found in the body cavity of *D. pulex* and *D. magna* two days after these had been given access to the eggs. The larvae, 0.126–0.156 mm. long, grew rapidly and after six days had their first moult at a length of 0.64 mm. Twelve to fourteen days after exposure the second moult occurred, giving rise to infective larvae 1.2–1.6 mm. long. Ducklings which were fed with infected *Daphnia* began to pass ova of *Echinuria* 51 days later. J.J.C.B.

(18b) The author describes *Parafilaria antipini* n.sp. from the adipose tissue of a male Crimean deer, *Cervus elaphus*, 4–5 years old. The description is based on one intact male worm and several fragments of a female. The principal characters of the male are as follows: body length 18.63 mm. by 0.3 mm. in maximum width; left spicule 0.492 mm., right spicule 0.156 mm., both transversely striated; 9 pairs of pre-anal and 5 pairs of post-anal papillae. The body fragments of the female are 0.396 mm. in maximum width; the intestine ends subterminally and blindly, the anus being atrophied. Both sexes possess a band dotted with cuticular plaques which extends along the body, a character distinguishing the species from *P. bovicola*. The male is distinguished from *P. bovicola* and *P. multipapillosa* by the length of the spicules and by the arrangement of the anal papillae. J.J.C.B.

19—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. GALLIARD, H., 1947.—“Les types de développement exogène de *Strongyloides stercoralis*. Leur transformation par passages expérimentaux.” 141 (3/4), 102–105.
- b. GALLIARD, H., 1947.—“Développement des microfilaries de *Filaria malayi* chez *Aedes* (*S.*) *aegypti* et *Aedes* (*S.*) *albopictus*.” 141 (3/4), 105–106.

(19a) In 19 human cases of strongyloidiasis stercoralis observed by Galliard in China and Indo-China, the exogenous development consisted of the purely direct method in two cases, purely indirect (heterogenic) in one case, and direct and indirect mixed in 16 cases; in the latter group the direct was predominant in 10 cases. It was also observed that in any individual the type of development, whether direct, indirect or mixed, did not vary much over a period of several weeks. Successive transmissions of a human strain of the infection through dogs showed that there is a tendency for the ultimate development of a stable type of mixed exogenous development in which the heterogenic type predominates. This tendency is independent of the nature of the filariform larvae. The repeated passage of a strain through successive experimental animals does not reduce its virulence. J.J.C.B.

(19b) Galliard discusses some apparent anomalies in the infectivity of *Aedes aegypti* and *A. albopictus* with *Wuchereria malayi*. Whereas in 1938 he failed to infect these species by giving them infective blood meals with *Mf. malayi*, four years later he was successful. Both species are recorded as new carriers of *W. malayi*. This is the first time in which a human filaria has been observed to develop completely in *A. albopictus*. Commenting on the negative results obtained by other workers, notably in China, in trying to infect *A. albopictus* with *W. malayi*, he remarks that the number of mosquitoes employed has no bearing on the results obtained. Similarly the number of larvae in the peripheral blood of the subject does not affect the susceptibility of the two species of mosquito in question. The theory is put forward that local races of parasites may exist which are adaptable to certain species of mosquitoes. J.J.C.B.

20—Deutsche Tierärztliche Wochenschrift.

- a. SCHMIDT, H. W., 1947.—“Fuchs und Dachs als Trichinenüberträger.” 54 (7/8), 55–57.
- b. ENIGK, K., 1947.—“Die Desinfektion beim Spulwurm- und Kokzidienbefall.” 54 (11/12), 86–89.
- c. WETZEL, R., 1947.—“Zur planmässigen Bekämpfung des Leberegels.” 54 (15/16), 114–117.
- d. VELBINGER, H. H., 1947.—“Wirkung und Anwendung des Phenothiazins als Antiparasiticum. Neue Untersuchungen zur Feststellung der vermiziden und insektiziden Wirksamkeit.” 54 (17/18), 130–133.

(20a) Schmidt discusses the important role played by foxes and badgers in the dissemination of trichinelliasis in Germany. In foxes the incidence is estimated at 4% and in badgers it is thought to be even higher. Contrary to recently expressed opinion, field mice are not an important link in the transmission of infection from fox to fox, and from fox to domestic animals.

Transmission is direct and is mainly due to fox carcasses being used as bait or left to rot in the open ; domestic animals can also become infected by picking up scraps of fox flesh left about when carcasses are skinned without proper care. In order to prevent the spread of trichinellosis, fox (and badger) carcasses should be very carefully disposed of, and great care should be exercised when animals are skinned. All fox flesh intended for human consumption should, of course, be subjected to *Trichinella* inspection.

A.E.F.

(20b) Enigk has tested a number of disinfectant emulsions for their efficacy against ascarid eggs. The most effective was "K16", a carbon disulphide emulsion with the addition of crude cresol in the proportion of 4 : 1. Undeveloped eggs of *Toxocara canis* and *Toxascaris leonina* were all killed within 2½ minutes in a 5% emulsion at tap-water temperature. Embryonated eggs were killed in 4 minutes under the same conditions. In practical tests in kennels, fox farms and lion cages this mixture proved superior to any of the common disinfectants : it was equally effective in killing coccidial oöcysts.

A.E.F.

(20c) Wetzel describes in some detail a plan for controlling liver-fluke infestation in cattle and sheep, based on the biology and epidemiology of the parasite. All herds in affected areas and every animal in infected herds must be treated. Subclinical infections can be discovered by annual faecal examination in the autumn. Animals should be treated (hexachlorethane is recommended) in spring when put out to pasture and again eight weeks later. Infections which may be picked up while animals are at pasture may be countered by further treatment (once for cattle and twice for sheep) during the summer. Although clean pasture is of paramount importance, other measures such as destruction of snails, clearing of ditches, and the provision of clean drinking water should not be neglected.

A.E.F.

(20d) Velbinger is concerned mainly with the effect of phenothiazine on insect parasites, but he makes brief mention of its successful use against strongyles and *Ascaris* in horses. Reference is also made to a paper by Lebinski [*Das Deutsche Gesundheitswesen*, 1947, No. 3] which describes the use of a phenothiazine preparation ("Thional"—Borchers) in the treatment of enterobiasis in man ; no details are given, but anal administration is said to have met with considerable success. Velbinger states that phenothiazine paralyzes strongyles and oxyurids : the first symptoms appear after a few minutes, but death often does not take place until after 8 or more hours.

A.E.F.

21—Farming in South Africa.

- a. DU TOIT, P. J., 1947.—"Safeguarding the Union's livestock industry." 22 (251), 166–187.

(21a) In his report on the work of the Division of Veterinary Services for the year 1945–46, du Toit records that a severe outbreak of helminthiasis in sheep occurred in the Garies district of Namaqualand.

R.T.L.

22—Indian Medical Gazette.

- a. MUKERJI, A. K. & BHADURI, N. V., 1947.—"The treatment of intestinal worms with the indigenous drugs Butea, Embelia and Kamala." 82 (2), 66–69.
 b. CHAUDHURI, R. N. & MUKERJI, A. K., 1947.—"Death following administration of tetrachlorethylene." 82 (3), 115–116.
 c. HENRIQUES, J. F., 1947.—"Helminthagogues." [Correspondence.] 82 (3), 176.

(22a) Mukerji and Bhaduri find that the indigenous drugs Butea, Embelia and Kamala are of no value in the treatment of hookworm and tapeworm infections. For ascariasis Butea and Embelia are cheap and efficient : they are as good as oil of chenopodium and better than santonin. The doses of these drugs, however, cannot be reduced proportionately for children without losing their anthelmintic action.

R.T.L.

(22b) A case report is given of what is stated to be the first case of death following the administration of tetrachlorethylene for hookworm. On admission for treatment the patient was in a state of chronic malnutrition with emaciation and oedema of the lower extremities and suffered from a chronic abdominal pain, probably due to cholecystitis.

R.T.L.

(22c) Mist chlorine [?] *mistura chlori*] treatment was followed by the evacuation of roundworms on the 2nd or 3rd day. In a case of tapeworm the entire worm was expelled by this treatment. *Enterobius vermicularis* was also expelled. In children with malaria and *Ascaris lumbricoides* the chlorine mixture served a dual purpose when quinine was added. R.T.L.

23—Journal of the American Veterinary Medical Association.

- a. ANON, 1947.—“The treatment of parasites of domestic animals with phenothiazine.” 110 (838), 26–27.
- b. ANON, 1947.—“Liver fluke control in sheep.” 110 (841), 255.
- c. ANON, 1947.—“*Ascaris suis* embryos in pig livers.” 111 (844), 60.

(23c) This is an annotation based on a paper by Commény, Drieux & Verge (1946) in *Bull. Acad. vét. Fr.*, 19 (6), 190–195, from which two figures are reproduced. [The title of the annotation is somewhat misleading as the figures and the text of the original show that the worms were adults.] R.T.L.

24—Journal of Dairy Science.

- a. WISE, G. H., JAMES, III, C. A. & ANDERSON, G. W., 1947.—“Toxicity of phenothiazine derivatives excreted in the milk of dairy cows treated with massive doses of the drug.” 30 (1), 55–59.

(24a) Following the administration of phenothiazine as an anthelmintic the milk may contain phenothiazine derivatives. The possibility that milk from cows so treated might be toxic to infants led the authors to study the effect of contaminated milk on young rats. The administration of over twice the maximum therapeutic dose, 125 gm., produced no detectable effects in lactating cows except a temporary repression of milk production. Phenothiazine derivatives were detected in the milk for 36–60 hours, but no discernible symptoms occurred in young rats fed solely on the milk collected at the 12th and 24th hour after the administration of the drug, thus confirming the results obtained by Andrews & Connelly [Helm. Abs., 13, No. 55d] in pigs, Habermann [Helm. Abs., 12, No. 46d] in kids, and Swales & Collier [Helm. Abs., 9, No. 80d] in lambs. Nevertheless the authors support Bercovitz et al. [Helm. Abs., 12, No. 77c] in their recommendation that milk of treated cows should not be used for human consumption in view of the human variation in susceptibility to phenothiazine. R.T.L.

25—Journal of Experimental Biology.

- a. BALDWIN, E. & MOYLE, V., 1947.—“An isolated nerve-muscle preparation from *Ascaris lumbricoides*.” 23 (3/4), 277–291.

(25a) A method is described for the preparation of semi-isolated muscle strips from *Ascaris lumbricoides* females for the study of anthelmintics, and some new observations are incidentally added on the nature and composition of the body-space fluid. R.T.L.

26—Journal of Infectious Diseases.

- a. WHARTON, D. R. A., 1947.—“Further evaluation of the skin test for filariasis in man, based on results obtained in British Guiana.” 80 (1), 117–120.

(26a) Further tests for filariasis were made on 215 persons in British Guiana with an antigen of *Dirofilaria immitis* in a dilution of 1 : 100,000 controlled by a corresponding dilution of dog serum. A positive reaction was obtained in 89.8%. Twenty-six out of 29 old elephantoid cases were positive. Wharton recommends this antigen for its dependability, safety and ease of application. R.T.L.

27—Journal of Parasitology.

- a. STOLL, N. R., 1947.—“This wormy world.” [Presidential Address.] 33 (1), 1–18.
- b. BROWN, H. W. & HUSSEY, K. L., 1947.—“Experimental therapy of paragonimiasis in dogs.” 33 (1), 33–35.
- c. OLSEN, O. W., 1947.—“Longevity of metacercariae of *Fasciola hepatica* on pastures in the upper coastal region of Texas and its relationship to liver fluke control.” 33 (1), 36–42.
- d. VON BRAND, T. & SIMPSON, W. F., 1947.—“Physiological observations upon a larval *Eustrongylides*. X. The lethal mechanism of bacteria.” 33 (1), 71–78.

- e. LARSH, Jr., J. E., 1947.—"The relationship in mice of intestinal emptying time and natural resistance to *Hymenolepis*." 33 (1), 79-84.
- f. CRUSZ, H., 1947.—"The early development of the rostellum of *Cysticercus fasciolaris* Rud., and the chemical nature of its hooks." 33 (2), 87-98.
- g. WEBSTER, J. D., 1947.—"Studies on the genus *Hymenolepis*, with descriptions of three new species." 33 (2), 99-106.
- h. THOMAS, L. J., 1947.—"The life cycle of *Diphyllbothrium oblongatum* Thomas, a tapeworm of gulls." 33 (2), 107-117.
- i. VAN CLEAVE, H. J., 1947.—"A critical review of terminology for immature stages in acanthocephalan life histories." 33 (2), 118-125.
- j. VAN CLEAVE, H. J., 1947.—"On the occurrence of the acanthocephalan genus *Telosentis* in North America." 33 (2), 126-133.
- k. FAUST, E. C., 1947.—"The effects of cold temperatures on the eggs of *Schistosoma japonicum*." 33 (2), 134-137.
- l. SCOTT, J. A., STEMBRIDGE, V. A. & SISLEY, N. M., 1947.—"A method for providing a constant supply of tropical rat mites, *Liponyssus bacoti*, infected with the cotton rat filaria, *Litomosoides carini*." 33 (2), 138-141.
- m. TRAVIS, B. V., 1947.—"Relative efficiency of six species of mosquitoes from Guam, M.I., as developmental hosts for *Dirofilaria immitis*." 33 (2), 142-145.
- n. TODD, A. C., 1947.—"New records of helminths in chickens from Tennessee." 33 (2), 170.
- o. BEARUP, A. J., 1947.—"Hookworm infestations in Australian soldiers." 33 (2), 170-171.
- p. STOLL, N. R., 1947.—"Concerning reports of *Ancylostoma braziliense*." 33 (2), 171.
- q. TAKOS, M. J., 1947.—"Blood parasites of some Panamanian birds." 33 (3), 229-230.
- r. READ, C. P., 1947.—"A new trematode, *Opecoeloides polyfimbriatus* n.sp., from the lizard fish, *Synodus foetens*." 33 (3), 231-233.
- s. OLIVIER, L., 1947.—"*Cercaria koliensis*, a new fork-tailed cercaria from Guadalcanal." 33 (3), 234-240.
- t. CHANDLER, A. C., 1947.—"Notes on *Moniliformis clarki* in North American squirrels." 33 (3), 278-281.
- u. GRIFFITHS, H. J., 1947.—"A record of *Trichostrongylus tenuis* from the domestic goose in Canada." 33 (3), 282.

(27a) From an intimate acquaintance with helminthological literature, Stoll presents an impressive analysis of the world burden of helminthiases. This remarkable study is summarized in a table which sets out the estimated numbers of human beings infected with the various species in the main geographical areas of the world.

R.T.L.

(27b) Dogs experimentally infected with *Paragonimus kellicotti* by feeding them with infected crayfish from Michigan were treated, without success, with anthiomaline, neostibosan, thioglycollate of arsenobenzamide and methylene violet.

R.T.L.

(27c) In the coastal area of Texas the cysts of *Fasciola hepatica* are destroyed by summer heat and drought but mass reinfection of pastures occurs after the onset of the winter rains. Treatment in late autumn when only adult flukes are present is the best method of reducing their numbers. Hexachlorethane and carbon tetrachloride do not kill the immature flukes.

R.T.L.

(27d) If kept in proteose peptone media inoculated with *Bacillus subtilis* or *Escherichia coli* the larvae of *Eustrongylides ignotus*, which are relatively sensitive to bacterial contamination, die within a short time. In sterile filtrates of this medium in which *B. subtilis* had grown for 7-9 days, they were killed in less than 24 hours. It is shown that free ammonia formed by the bacteria is the toxic agent; 20 mg. % ammonia concentration is lethal in less than 24 hours. This result cannot, however, be generalized. Other bacteria may kill in a different way, e.g. cultures of *E. coli*, containing sugar and in which the pH was lowered to about 4.5 by bacterial acid production, were rapidly lethal although the acidity was not harmful to the worms. Of 8 amines tested only methylamine and trimethylamine were decidedly toxic while histamine and tryptamine had no helminthocidal action.

R.T.L.

(27e) Larsh, jr. shows that the resistance of mice to infestation with *Hymenolepis nana* var. *fraterna* is due, in part at least, to the fact that many of the ova pass through so quickly that hatching does not take place. He slowed down the movements of the intestine by means of opium and morphine sulphate administered by the parenteral route, then fed cestode ova. These mice developed an increased percentage development of *Hymenolepis*. The amount of food received by the mice beforehand appeared to have little effect on these results.

P.A.C.

(27f) Using *Cysticercus fasciolaris*, Cruz describes the development of the rostellum and gives some observations on the nature of the cuticle and the hooks. Hooklets are formed on the entire cuticle of the bulb and pre-bulbar region as a result of the cementing together of certain cuticular processes, but most of them disappear at an early stage. None occur on the suckers or the region posterior to them. Hooks develop from hooklets in the pre-bulbar region round which farther secretion of hook substance is later deposited. This substance seems to be a scleroprotein of the keratin type. P.A.C.

(27g) *Hymenolepis (Hymenolepis) hughesi* n.sp., a parasite of *Charadrius melodus* in Texas, can be recognized by the arrangement of the testes in a transverse row, by the structure of the cirrus sac and its contents, and by the shape of the rostellar hooks. *Hymenolepis (Echinocotyle) litoralis* n.sp. is a parasite of *Crocethia alba* in Texas: the testes are arranged in an inverted triangle and there are two accessory sacs surrounded by very few glandular cells. Also from *C. alba* and from *Arenaria interpres* was obtained *Hymenolepis (Echinocotyle) crocethiae* n.sp. which possesses hooks of a characteristic shape and size, spined suckers, and testes arranged in a triangle. Webster is of the opinion that it is reasonable to admit the validity of the subgenus *Echinocotyle*, the species of which form a homogeneous group. The synonymy of *Taenia fusus* Krabbe is discussed. P.A.C.

(27h) The coracidium of *Diphyllobothrium oblongatum* develops into a proceroid in *Diaptomus oregonensis*. The anterior end of the proceroid is very active and is covered in spines. The plerocercoid develops to the infective stage in about 135 days in various fishes, particularly guppies, ciscos (*Leucichthys artedi*) and minnow (*Notropis deliciosus*). The definitive hosts, *Larus argentatus* and *L. delawarensis*, begin to pass eggs after about 24 days. The worms are expelled some $3\frac{1}{2}$ –4 weeks after maturity is reached. P.A.C.

(27i) Van Cleave reaffirms the necessity for standardizing the nomenclature of the stages of development among the Acanthocephala. The embryo which develops within the egg-shell is a distinct larval form, the acanthor. This hatches in the gut of the vector and undergoes metamorphosis in the body cavity where a series of larval stages develops: these may be called acanthellae. The larval stage is finished by the development of the typical adult proboscis and hooks. The parasite is then recognizable as a "juvenile", the further development of which occurs only after ingestion by the definitive host. P.A.C.

(27j) Van Cleave recognizes three species of the genus *Telosentis*. They are *T. tenuicornis* found in eight genera of marine fishes, which used to be assigned to the genus *Rhadinorhynchus*, *T. exiguus* from various fishes in southern European waters, and *T. molini* from fish in the Mediterranean. *T. tenuicornis* is the first record of the genus outside European waters. P.A.C.

(27k) Faust has carried out some cold-temperature tests on the eggs of *Schistosoma japonicum* and finds that a high percentage retain their viability after three months in an ice-box at 4°C. About 50% retain their viability when kept for five months. It seems evident, therefore, that ova can remain alive through the cold season in South China and hatch in the spring. P.A.C.

(27l) An illustrated modification is given of a tank used by Scott & Cross (see *Amer. J. trop. Med.*, 26, 849–855) for the raising of *Liponyssus bacoti* as intermediary hosts of *Litomosoides carinii*. Approximately 25% of the mites raised by its use are infected. R.T.L.

(27m) Six of the nine known species of mosquitoes on Guam were experimentally infected with *Dirofilaria immitis*. *Culex quinquefasciatus*, *C. annulirostris* and *Aedes guamensis* did not feed readily on dogs whereas *C. sitiens*, *A. aegypti* and *A. pandani* did. In all six species the infection rate was low but it was not possible to determine their relative efficiency as natural vectors. R.T.L.

(27n) Todd records the presence of *Echinoparyphium recurvatum* and *Fimbriaria fasciolaris* in chickens in U.S.A. P.A.C.

(27o) Bearup stresses the fact that species of hookworm from the Pacific reported by Lowe & Lancaster [see Helm. Abs., 13, No. 42a] were identified by culturing faecal specimens. The characters used were the structure of the buccal cavity of the larva and the position of the genital anlagen. Feeding experiments were also carried out. P.A.C.

(27p) Stoll withdraws the criticism made [*J. Parasit.*, 32, 490-496] against Lowe & Lancaster [Helm. Abs., 13, No. 42a] as to the validity of the identification of human hookworm species. Stoll further draws attention to an error in Helm. Abs., 11, No. 164c, in which five cases of *Ancylostoma duodenale* infection in Chinese and Malays in Java are ascribed to *A. braziliense*. R.T.L.

(27q) Microfilariae are recorded by Takos in the blood of six species of birds in Panama, viz., *Anhinga anhinga*, *Cochlearius zeledoni panamensis*, *Colymbus dominicus brachypterus*, *Milvago chimachima cordata*, *Piaya cayana thermophila* and *Rupornis magnirostris ruficauda*. R.T.L.

(27r) With the description by Read of *Opecoeloides polyfimbriatus* n.sp. from *Synodus foetens* the number of species in the genus is raised to five, and considerably strengthens the validity as generic characters of the uroproct and acetabulum papillae. The validity of the genus *Anisoporus* is still questionable. R.T.L.

(27s) A bifid-tailed cercaria from rediae in *Melanoides terebra* (?) in the Solomon Islands is named *C. koliensis* n.sp. It has a cycloid gut. The reproductive organs are precociously developed and approach adult condition. It resembles *C. patialensis* Soparkar, 1924 and belongs probably to the genus *Transversotrema*. R.T.L.

(27t) Chandler supports the view that *Moniliformis clarki* from grey squirrels, fox squirrels and flying squirrels in Florida is a valid species distinguishable from *M. dubius* by the small size of the proboscis, proboscis sac and eggs, and the longer and more slender lemnisci. *M. spirodentatis* McLeod, 1933 is thought to be a synonym. R.T.L.

(27u) *Trichostrongylus tenuis* has been noted post mortem in a domestic goose in Ontario. This is the first record of this species in this host in Canada, although heavy losses have been recorded in the District of Columbia and Michigan, U.S.A. R.T.L.

28—Journal of the Royal Egyptian Medical Association.

- a. NAGATY, H. F., 1947.—“The incidence of parasitic infections among the labourers of Ras Gharib, Red Sea District.” 30 (1), 14-21.
- b. HALAWANI, A., 1947.—“On the effect of the delta isomer of benzene hexachloride (Deltaxane) on the snails *Bulinus* and *Planorbis*.” 30 (1), 35-41.
- c. HASHEM, M., 1947.—“The aetiology and pathogenesis of the endemic form of hepatosplenomegaly ‘Egyptian splenomegaly’.” 30 (2), 48-79.
- d. NAGATY, H. F., MEGUID FAHMY, M. A. & HEGAB, S. M., 1947.—“New records of some parasites from Egyptian food mammals.” 30 (4), 217-218.

(28a) With the object of ascertaining data bearing on the longevity of helminths, Nagaty examined 111 individuals, mostly male labourers from Upper Egypt, employed at Ras Gharib, a small desert town created on the shore of the Gulf of Suez by an oilfields company. The total population numbered about 4,000. All the fresh water required was conveyed from Suez by tanker. A tabular statement gives for each individual his age, original home, date of last leave, helminths found in faeces and urine. About 5% were infected with *Ancylostoma duodenale*, about 6% with urinary or intestinal schistosomiasis, 3% with *Ascaris lumbricoides*, 2% with *Taenia saginata*, 4% with *Hymenolepis nana* and 2% with *Enterobius vermicularis*. One case is reputed to have acquired *S. mansoni* south of Cairo. R.T.L.

(28b) Of 4 isomers of benzene hexachloride tested on *Planorbis* and *Bulinus*, the beta isomer had no deleterious effects, the alpha isomer only paralysed the snails, the gamma and delta isomers were lethal in a dilution of 5 parts per million of water, the delta isomer being definitely more effective. R.T.L.

(28c) In Lower Egypt, particularly in areas infected with *Schistosoma mansoni*, a hepatic fibrosis often accompanied by enlargement of the spleen, leucopenia and hypochromic anaemia is common. The so-called bilharzial cirrhosis is essentially the result of fibrosis consequent on infiltration by *Bilharzia* eggs or worms in and around the fine portal tracts. This fibrosis extends in finer bands along the subdivisions of Glisson's capsule, probably as a result of bilharzial toxins diffusing along the terminations of the occluded portal venules. The fibrous extensions from neighbouring tracts unite. Bilharzial fibrosis differs from Laennec's cirrhosis essentially in that the former is interstitial while the latter follows the degeneration of the liver cells; in the former there is no evidence of regeneration. The author suggests as alternative terms "bilharzial hepatic fibrosis" for "bilharzial cirrhosis", "fine bilharzial periportal fibrosis" for "diffuse bilharzial cirrhosis", and "coarse periportal bilharzial fibrosis" for "clay pipe-stem cirrhosis".

R.T.L.

(28d) *Moniezia expansa*, *M. denticulata*, *M. trigonophora*, *Avitellina aegyptiaca*, *A. nagaty*, *Impalaia nudicollis* and *Cooperia pectinata* are recorded from *Camelus dromedarius*; *Helicometra giardi*, *A. nagaty*, *Parabronema skrjabini*, *Cooperia curticei* and *C. oncophora* from sheep are all recorded for the first time in Egypt.

R.T.L.

29—Journal of Tropical Medicine and Hygiene.

- a. GELLHORN, A., ROSE, H. M. & CULBERTSON, J. T., 1947.—"The plasma antimony concentration and the urinary antimony excretion in man during therapy with organic antimony compounds." 50 (2), 27-31.

(29a) The plasma antimony concentration was determined in 40 filariasis patients receiving therapeutic doses of three trivalent antimonials, anthiomaline, fouadin and tartar emetic, and three pentavalent antimony compounds, neostam, stibanose and neostibosan. By far the highest antimony concentrations were attained in the plasma of patients receiving neostibosan, the maximum being about 1.5 mgm. per 100 ml. of plasma. The urinary excretion of neostibosan and fouadin antimony was determined in five patients and it was found that the pentavalent antimony of neostibosan is excreted to a far greater extent relative to the antimony dosage than is the trivalent antimony of fouadin.

J.J.C.B.

30—Lancet.

- a. JOHNSTONE, R. D. C., 1947.—"Loiasis." Year 1947, 1 (6442), 250-253.

(30a) Johnstone outlines the life-history, pathology and treatment of *Loa* infections. He considers that the psychological effect of the constant creeping sensation caused by the worm under the skin of the face is not adequately appreciated by physicians. He gives a detailed account of his personal experience as a victim of this infection.

R.T.L.

31—Lantmannen.

- a. ÅKERBERG, E. & BINGEFORS, S., 1947.—"Klövertrötthet och parasiter." 31 (4), 83-85.

(31a) The most important parasites of red clover in Sweden are the fungus *Sclerotinia trifoliorum* and the nematode *Anguillulina dipsaci*. By the repeated selection of local strains of clover, two have been developed (Merkur and Resistanta) which are high yielding and show marked resistance to parasitic diseases. The authors give the results of two trials, one on fairly clean land and the other on soil where disease was severe and mainly due to eelworm, of the two resistant and two non-resistant varieties of red clover. Where clover sickness was present the two resistant varieties gave a much better stand than the others (Ultuna and Göta). It is stated that, if a resistant variety is chosen, it is possible to grow clover on land containing the parasites.

M.T.F.

32—Malayan Agricultural Journal.

- a. MARSH, T. D. & KANAGARATNAM, N., 1947.—"Kidney worm of pigs. Effects of feeding banana stems to infested pigs." 30 (2), 55-63.

(32a) The feeding of cooked stems of bananas to pigs resulted in a higher percentage of healthy livers and kidneys in carcasses infested with *Stephanurus dentatus*, or at least in amelioration of the effects of these worms. This gave support to a belief current among Chinese pig-keepers, but Marsh & Kanagaratnam obtained no evidence that banana stems had anthelmintic properties.

R.T.L.

33—Military Surgeon.

- a. COLVIN, J. W., RUEBUSH, T. K., AVERY, J. L. & LANIER, R. N., 1947.—“Enteric protozoa and helminth findings as influenced in the war years.” 100 (3), 229–231.

34—Mysore Agricultural Journal.

- a. VENKATARAYAN, S. V., 1947.—“Diseases of coffee.” 25 (1/2), 3–20.

(34a) Control of eelworm infections (*Anguillulina* spp.) of coffee plants is a difficult problem. Hot-water sterilization of supply plants and chemical disinfection of the soil are ineffective, potash causes depression, and other manurial treatments are useless. No species of coffee is free from infection. *Heterodera marioni* has not been found in coffee in India. R.T.L.

35—Nature. London.

- a. CREWE, W., 1947.—“Helminth parasites of limpets.” [Correspondence.] 159 (4033), 238.
 b. ROGERS, W. P., 1947.—“Histological distribution of alkaline phosphatase in helminth parasites.” [Correspondence.] 159 (4037), 374–375.
 c. PICKEN, L. E. R., PRYOR, M. G. M. & SWANN, M. M., 1947.—“Orientation of fibrils in natural membranes.” [Correspondence.] 159 (4039), 434.
 d. LAL, M. B., 1947.—“Acanthocephala of trout and anthelmintics: behaviour *in vitro*.” [Correspondence.] 159 (4042), 545–546.

(35a) In a preliminary note on his investigations into the possible bearing of helminth parasitism on mortality and sex proportions in British limpets, Crewe notes that castration of the host is one of the more obvious effects but that there is no apparent difference in vitality between infected and normal limpets. From observations on *Cercaria patellae* it is suggested that migration of cercariae within the haemocoel and their subsequent escape from the mantle may be a common occurrence in infected molluscs.

R.T.L.

(35b) Rogers shows that alkaline phosphatase is present in considerable amounts on or in the cuticle of mature segments of *Moniezia expansa* whereas in young proglottides where this cuticle is absent no phosphatase reaction could be obtained. In *Ascaris lumbricoides* the phosphatase reaction was given only by small spherical bodies in the intestinal cells. It is concluded that in the helminths examined the greatest concentrations of alkaline phosphatase occurred in those regions associated with carbohydrate absorption.

R.T.L.

(35c) In *Ascaris* cuticle two sets of fibrils make an angle of about 135° with each other and of about 70° with the long axis. This arrangement may be mechanically advantageous, for though the individual fibrils are inextensible the resulting membrane is capable of anisometric extension.

R.T.L.

(35d) Using *Echinorhynchus truttae* from *Salmo trutta* kept in 1% solution of sodium chloride in which various anthelmintics were suspended or dissolved, Lal found that carbon tetrachloride, thymol and copper sulphate were lethal at 0.05% while santonin and sulphathiazole produced no visible toxic effect at 1%. Oil of chenopodium usually killed at over 1% but weaker solutions merely caused paralysis. The effects of the different drugs on the proboscis and on the body movements are noted.

R.T.L.

36—New England Journal of Medicine.

- a. DENHOFF, E., 1947.—“The significance of eosinophilia in abdominal complaints of American soldiers.” 236 (6), 201–206.

(36a) Forty-seven of 59 American soldiers who were hospitalized in New Guinea as psychoneurotics with unexplained eosinophilia of over 9% were found to have intestinal helminths, chiefly hookworm and less frequently *Strongyloides*. The latter infection was diagnosed only after examination of duodenal fluid in four out of five cases. R.T.L.

37—New Zealand Journal of Agriculture.

- a. ANON, 1947.—“Nicotine and bluestone drenches.” [Answer to correspondent.] 74 (1), 72.
- b. WHITTEN, L. K., 1947.—“Calves temporarily blind after phenothiazine drenching.” 74 (2), 179.

(37b) On the day following dosing with phenothiazine the eyes of calves in New Zealand occasionally weep and later a milky film develops over the eye; in more severe cases a corneal ulcer may develop. In practically all instances recovery took place, in mild cases in 10 days whilst in more severe cases a small scar remained for 3–4 months. Most of the cases reported have been in the Waikato, Manawatu, Taranaki and North Auckland districts and occurred between January and March, mostly in calves under 8 months old. R.T.L.

38—North American Veterinarian.

- a. ANON, 1947.—“Salmon poisoning in dogs.” [Questions & Answers.] 28 (1), 42.
- b. CRAIGE, Jr., A. H., 1947.—“Teniasis as a cause of running fits. A clinical report.” 28 (2), 94–95.
- c. STAUFFER, V. D., GONZALES MUGABURU, L. & REY DE CASTRO, A., 1947.—“Results of trials with hexachlorethane in the treatment of distomatosis of sheep.” 28 (7), 437–439.

(38b) Several cases are recorded in which fits, hyperaesthesia and posterior incoordination in dogs ceased following treatment with Teniathane (2,2'-dihydroxy-5,5'-dichlorodiphenylmethane). R.T.L.

(38c) The effectiveness of hexachlorethane against fascioliasis in sheep when administered as a dry pressed bolus is demonstrated. The drug is rapidly dissolved and has a wide margin of safety even in pregnant animals or those in poor condition. The bolus is easy to prepare and administer by a balling-gun, is relatively cheap, and withstands changes of temperature without breaking down. R.T.L.

39—Pacific Science.

- a. ALICATA, J. E., 1947.—“Parasites and parasitic diseases of domestic animals in the Hawaiian Islands.” 1 (2), 69–84.

(39a) During the past century a considerable number of helminths and protozoa have been imported from various parts of the world into the Hawaiian Islands where, owing to climatic and other favourable conditions, they have become of economic importance. Alicata gives a résumé of the species now endemic in domesticated stock and poultry, and their intermediate hosts. R.T.L.

40—Parasitology.

- a. BAYLIS, H. A., 1947.—“The larval stages of the nematode *Mermis nigrescens*.” 38 (1/2), 10–16.
- b. NAGATY, H. F., 1947.—“*Dipetalonema evansi* (Lewis, 1882) and its microfilaria from *Camelus dromedarius*.” 38 (1/2), 86–92.
- c. DAVIES, T. I. & REES, G., 1947.—“*Andrepigynotaenia haematopodis* n.g., n.sp., a new protogynous tapeworm from the oystercatcher *Haematopus ostralegus occidentalis* Neumann.” 38 (1/2), 93–100.
- d. CROFTON, H. D., 1947.—“The second ecdysis of *Trichostrongylus retortaeformis* (Zeder).” 38 (1/2), 101–103.
- e. AKHTAR, S. A., 1947.—“A new genus of nematodes, parasitic in the pika.” 38 (1/2), 104–106.
- f. STEPHENSON, W., 1947.—“Physiological and histochemical observations on the adult liver fluke, *Fasciola hepatica* L. I. Survival *in vitro*.” 38 (3), 116–122.
- g. STEPHENSON, W., 1947.—“Physiological and histochemical observations on the adult liver fluke, *Fasciola hepatica* L. II. Feeding.” 38 (3), 123–127.

- h. STEPHENSON, W., 1947.—“Physiological and histochemical observations on the adult liver fluke, *Fasciola hepatica* L. III. Egg-shell formation.” 38 (3), 128-139.
- i. STEPHENSON, W., 1947.—“Physiological and histochemical observations on the adult liver fluke, *Fasciola hepatica* L. IV. The excretory system.” 38 (3), 140-144.
- j. BAYLIS, H. A., 1947.—“A redescription of *Uncinaria lucasi* Stiles, a hookworm of seals.” 38 (3), 160-162.
- k. SMYTH, J. D., 1947.—“Studies on tapeworm physiology. II. Cultivation and development of *Ligula intestinalis* in vitro.” 38 (3), 173-181.

(40a) Baylis has studied in detail the larval development of *Mermis nigrescens* in earwig nymphs. The maximum number of larvae found in naturally infected nymphs was four. The worms measured 20-69 mm. in length. It is suggested that the function of the oesophageal apparatus is connected with the act of emergence and that it may have a proteolytic secretion which assists the worm to re-enter the alimentary canal from the body cavity of the host, since emergence takes place through the anus or mouth. R.T.L.

(40b) Nagaty clears up the doubtful connection between the adult *Dipetalonema evansi* and the microfilariae which are found in the blood of *Camelus dromedarius* and *C. bactrianus*. He describes the morphology of the adult and microfilariae, and reports the occurrence of adult worms in the right auricle—an apparently new habitat. R.T.L.

(40c) A protogynous condition is known only in *Andrepigynotaenia* and 4 other cestode genera. The chief characteristic of these 5 genera are tabulated and a detailed description is given of *A. haematopodis* n.g., n.sp. from the oystercatcher, *Haematopus ostralegus occidentalis*, shot near Aberystwyth, Wales. R.T.L.

(40d) The effect of saliva, HCl and pepsin on the infective larvae of *Trichostrongylus retortaeformis* was tested experimentally. Pepsin alone caused ecdysis which was completed after 60 hours. The most favourable pH was 4.5 which is within the pH range quoted for the stomach contents of rabbits. R.T.L.

(40e) *Cephaluris*, a new genus of Oxyuridae closely resembling *Dermatoxys*, is based on *Cephaluris ochotonae* n.sp. from a pika (*Ochotona rufescens*). The cuticle of the head region is extended and projects to form a pair of dorsal cephalic shields in both sexes. R.T.L.

(40f) Stephenson deals with optimal physico-chemical conditions for keeping adult *Fasciola hepatica* alive *in vitro*. Wide ranges of osmotic pressure and of the ratios K : Na and Ca : Na were tolerated; survival times were extended by sugars, especially monosaccharides, but not by bile salt or peptone. A number of bactericides were toxic, but the anthelmintics gentian violet, ethylene dichloride and carbon tetrachloride were without marked effect; trypan blue extended survival time. The best medium for survival was found to be, in millimoles, NaCl 150, KCl 10, CaCl₂ 1, borax 6, glucose 30, (pH 8.4), at 36°C. B.G.P.

(40g) From histological and histochemical tests, and observations on living flukes, Stephenson shows that adult *Fasciola hepatica* feed almost exclusively on blood. Within the gut oxyhaemoglobin yields successively haemoglobin and acid haematin, the gut epithelium probably secreting digestive enzymes and then absorbing the digested material. Attempts to extend survival time *in vitro* by adding blood were foiled by bacterial contamination. B.G.P.

(40h) Stephenson shows that the *Fasciola hepatica* egg-shell is composed of sclerotin, like the oötheca of the cockroach, and is derived from globules in the vitelline cells and not from the “shell gland”. These globules contain both a protein and an orthodihydroxyphenol; during its passage along the first part of the uterus the hydroxyphenol is oxidized (by a tissue haemoglobin) to a quinone which in turn tans the protein to sclerotin. Thus the egg-shell is a kind of leather. The aggregation and moulding of yolk cells and globules to form an egg seems partly due to the physical activities of clusters of spermatozoa. The function of Mehlis's gland may be to activate these spermatozoa. B.G.P.

(40i) Stephenson has not been able to find flame-cells in the adult excretory system of *Fasciola hepatica*, possibly because this system may be derived from the cercarial vesical wall.

The excretory system contains excreted fat globules and also a considerable concentration of vitamin C, the histochemical test for which (acidified silver nitrate) has been made more specific.

B.G.P.

(40j) Baylis supplements Stiles & Hassall's earlier description (1899) of *Uncinaria* sp. from *Callorhinus alascanus*, and points out that the name *Uncinaria lucasi* was first published by Stiles alone in *Texas Medical News*, 10, 523 (1901) unaccompanied by any description. *U. lucasi* has a close resemblance to *U. hamiltoni* from *Otaria byronia*. The females recorded as those of *U. hamiltoni* by Johnston & Mawson (1945) from *Mirounga leonina* are thought to belong to neither *U. hamiltoni* nor *U. lucasi*.

R.T.L.

(40k) The full development of *Ligula intestinalis* from the roach, *Rutilus rutilus*, has been successfully accomplished by Smyth using peptone broth at 40°C. as a culture medium. Some of the larvae became sexually mature, and oviposition took place after cultivation for seven days.

R.T.L.

41—Phytopathology.

- a. LEAR, B., 1947.—“Ethylene dibromide—a promising new soil fumigant.” [Abstract of paper presented at the 38th Annual Meeting of the American Phytopathological Society, Cincinnati, Ohio, December 28 to 30, 1946.] 37 (1), 14.
- b. VALLEAU, W. D. & JOHNSON, E. M., 1947.—“Meadow nematodes from brown root rot of tobacco.” [Abstract of paper presented at the 38th Annual Meeting of the American Phytopathological Society, Cincinnati, Ohio, December 28 to 30, 1946.] 37 (1), 22.
- c. MCFARLANE, J. S. & MATSUURA, M., 1947.—“The effectiveness of D-D as a soil fumigant in Hawaii.” 37 (1), 39-48.
- d. SMITH, A. L. & TAYLOR, A. L., 1947.—“Field methods of testing for root-knot infestation.” 37 (2), 85-93.
- e. TAYLOR, A. L. & McBETH, C. W., 1947.—“The effect of soil fumigation on growth and yield of peach trees.” [Abstract of paper presented at the 1947 Annual Meeting of the Southern Division, American Phytopathological Society.] 37 (6), 437.
- f. McCLELLAN, W. D., CHRISTIE, J. R. & HORN, N. L., 1947.—“Effect of temperature and moisture on the efficacy of soil fumigants.” [Abstract of paper presented at the 4th Annual Meeting of the Potomac Division, American Phytopathological Society.] 37 (6), 440.
- g. STEINER, G., 1947.—“Some little-known nematodes parasitic on roots.” [Abstract of paper presented at the 4th Annual Meeting of the Potomac Division, American Phytopathological Society.] 37 (6), 441.

(41a) Lear states that ethylene dibromide, used as a soil fumigant, has given excellent control of the root-knot nematode, *Heterodera marioni*. Almost complete eradication of the nematode was achieved by the injection of a mixture, consisting of one part ethylene dibromide diluted with 9 parts of propylene dichloride, at the rate of 4 c.c. at staggered intervals 10 inches apart in rows 10 inches apart, the substance being applied 4 inches deep. The fumigant was capable of penetrating solid gall material on tomato roots in 24 hours.

T.G.

(41b) Valleau & Johnson report the presence of *Pratylenchus pratensis* in the roots of several varieties of burley tobacco grown in the brown-root-rot plot at Lexington, Kentucky and in 132 other plots where tobacco makes slow growth after planting. It also occurred in the roots of several grasses and weeds preceding tobacco on 117 of these plots. They conclude that the injury caused by the nematodes to small tobacco roots would seem to be sufficient to account for the brown-root-rot injury.

T.G.

(41c) McFarlane & Matsuura have tested D-D as a soil fumigant for the control of the root-knot nematode, *Heterodera marioni*, in Hawaiian soils. Though the nematode is considerably reduced at most levels of treatment it is not completely eradicated by any of them. The required rate of application is higher in open porous soils under warm conditions (84° to 86°F.) than in heavy compact soils at a lower temperature. Continuous drill and spot injection methods gave similar results.

T.G.

(41d) In small-scale experiments with *Heterodera marioni* the infectivity of the soil or the resistance of crops can be measured by counting galls on roots of indicator plants. Smith & Taylor describe methods for field experiments, where gall counts are too tedious. The batch

of indicator plants is grown to maturity and the roots are then carefully lifted and classified according to severity of galling into five classes numbered 0 to 4. The product of the class number (c) and the frequency of plants falling in it (n) is called the category number (cn). The disease index is then 100 times the sum of the four category numbers (the lowest cn is necessarily zero) divided by 4 times the total number of plants, viz., $\text{Index} = 100.S(cn) \div 4.S(n)$. The index can take all values from zero to 100. The authors distinguish two indices depending on the basis of classification: (i) the "root-knot index" is derived from a classification in which classes 1 to 4 imply respectively 1 to 25%, 26 to 50%, 51 to 75%, and 76 to 100% of roots with galls; (ii) in the "relative root-knot index" arbitrary standards are set up for each class prior to classification. It follows that the latter index can be used comparatively only for those plants for which the same arbitrary standards were used. Examples are given illustrating the use of these two indices for soybean and cotton varieties, mixed interplanted crops, and chemical control experiments. Both indices were equally useful. Not less than six-fold replication is desirable in experimental plots. B.G.P.

(41e) Peach trees planted on sites treated with chloropicrin or D-D to control *Heterodera marioni* had significantly larger trunk diameters than those planted on untreated sites. There were also increases in the weight of fruit harvested. R.T.L.

(41f) Investigations by means of a Wisconsin-type soil temperature tank, on the effects of soil temperature and moisture on the efficacy of four fumigants (viz., chloropicrin, D-D, methyl bromide and ethylene dibromide) showed that these were most effective at higher temperatures, and for longer periods when the soil was wet. R.T.L.

(41g) A cyst-forming species of *Heterodera*, apparently only attacking polygonums, is widely distributed in potato fields of the eastern and central U.S.A. Normally the cysts are lemon-shaped, but variable forms may resemble *H. rostochiensis*: they differ from the latter in that the wall has linear meandrous ornamentations instead of rows of punctations. Nematodes feeding on the surface of roots have been rather neglected. Species of *Hoplolaimus* have been shown to damage seedlings of *Pinus taeda* and were found in large numbers on the roots of a declining gardenia. *Helicotylenchus* and *Rotylenchus* apparently initiate necrosis of roots by puncturing them. *Rotylenchus* is a later evolutionary form which remains fixed to the root surface and is swollen and immobile: it attacks cotton, tobacco, coffee weed and yew. M.T.F.

42—Plant Disease Reporter.

a. ANDERSON, P. J., 1947.—"Tobacco diseases in Connecticut in 1946." 31 (1), 21-23.

(42a) Nematode damage to tobacco in Connecticut is reported for the first time. Anderson reports a field of "Shade" tobacco in which *Heterodera marioni* had rendered the crop practically worthless. In several fields in which retarded growth had previously been identified as "brown root rot" he found *Pratylenchus pratensis*. R.T.L.

43—Proceedings of the Helminthological Society of Washington.

- a. KUSHMAN, L. J. & MACHMER, J. H., 1947.—"The relative susceptibility of 41 sweet-potato varieties, introductions, and seedlings to the root-knot nematode, *Heterodera marioni* (Cornu) Goodey." 14 (1), 20-23.
- b. CHRISTIE, J. R., 1947.—"Preliminary tests to determine the nematocidal and fungicidal properties of certain chemical compounds when used as soil fumigants." 14 (1), 23-28.
- c. SHORB, D. A. & SPINDLER, L. A., 1947.—"Growth rate of pigs fed skim milk to control intestinal parasites." 14 (1), 30-34.
- d. DIKMANS, G., 1947.—"A note on the caudal papillae of the male of *Wehrdikmansia cervipedis* (Wehr and Dikmans, 1935) Caballero, 1945." 14 (1), 34-35.
- e. ENZIE, F. D., 1947.—"The anthelmintic action of toluenes in dogs." 14 (1), 35-44.
- f. KATES, K. C., 1947.—"Diagnosis of gastrointestinal nematode parasitism of sheep by differential egg counts." 14 (1), 44-53.
- g. HILL, C. H., 1947.—"Preliminary note on the successful breeding of an intermediate host of the Asiatic blood fluke." 14 (1), 53-54.

(43a) Kushman & Machmer grew 41 varieties of sweet-potato in greenhouse soil infested with *Heterodera marioni*, and observed the numbers of egg masses produced on the roots of the plants at monthly intervals. The varieties were classified according to the infection index calculated from the results. Significant differences in susceptibility were observed, agreeing with those already reported: the Jersey types were the most consistently resistant while the Nancy Hall-Red Brazil group were highly susceptible, and Porto Rico, its selections and mutants were intermediate. M.T.F.

(43b) Christie tested 17 chemicals in fumigation boxes filled with sand in which were buried inocula of *Heterodera marioni* and of the aster-wilt fungus *Fusarium oxysporum* f. *callistephi*. The chemicals were injected at the centre of the 4-foot-long boxes and the inoculum units were placed at either side of this point at 3-inch intervals along the boxes: in most cases 2 c.c. was the dose injected. A week after the injections the boxes were opened and the inocula removed and tested. The most pronounced nematocidal effect was shown by proprietary mixtures containing dichloropropene, by mixtures containing methyl bromide, by carbon disulphide, by ethylene chlorobromide and by allyl bromide. Chloropicrin had a shorter killing range and cyanogen bromide (20% solution in benzene) a still shorter one. The best fungicides were chloropicrin and allyl bromide; the other chemicals were of little use against the fungus used. M.T.F.

(43c) Details are given of experiments from which it is concluded that the differences reported by Spindler & Zimmerman [see Helm. Abs., 13, No. 140c] between the weight gained by pigs fed on milk and those fed on grain only was primarily due to the freedom from intestinal parasites of the milk-fed animals. R.T.L.

(43d) Specimens of *Wehrdikhansia cervipedis* were found both free and in nodules under the skin of the belly, brisket and forelegs of a deer in Colorado. The number of caudal papillae on each side of the tail, previously reported as 6, was found to be 9 of which 4 are adanal, 3 between the adanals and 2 near the tip of the tail. In one specimen, only the right spicule was present. R.T.L.

(43e) At a dosage rate of 0.1 c.c. per lb. body weight, toluene, given to dogs in hard gelatin capsules after a fast of 18-24 hours, removed 100% of ascarids from two dogs, 99% of hookworms from four dogs and 75% of whipworms from six dogs. *o*-Chlorotoluene removed 100% of ascarids from two dogs, and 96% of hookworms and 92% of whipworms from four dogs. Iodotoluenes were significantly less effective than other halogenated compounds tested. R.T.L.

(43f) Kates discusses the utility and limitations of differential egg counts in the qualitative and quantitative determination of gastro-intestinal nematode populations in lambs. Marked variation was found when counts from individuals were compared. The average egg-worm ratios for the following genera were:—*Haemonchus* 1:1, *Trichostrongylus* 1:5.1, *Ostertagia* 1:1.8, *Cooperia* 1:5, *Nematodirus* 1:18.1, *Oesophagostomum* 1:1.2. Evidence is submitted to show that egg production decreases with the increase in the total number of nematodes present. The differential egg count may be of value for quantitative estimations if such counts are made on a fairly large number of animals from a flock and interpreted conservatively. R.T.L.

(43g) Hill obtained young snails of *Schistosomophora quadrasi*, an intermediate host of *Schistosoma japonicum*, in a large culture dish containing filtered river water and several large lumps of black bog soil to which dried and cured maple leaves and calcium carbonate were added from time to time. R.T.L.

44—Proceedings of the Society for Experimental Biology and Medicine.

- a. BUEDING, E., PETERS, L. & WAITE, J. F., 1947.—“Effect of 2-methyl-1, 4-naphthoquinone on glycolysis of *Schistosoma mansoni*.” 64 (1), 111-113.

(44a) *In vitro* tests with adult *Schistosoma mansoni* show that aerobic glycolysis, which is essential to their survival, is markedly inhibited by 2-methyl-1,4-naphthoquinone. When infected mice were fed on a diet containing 1.0–1.5% of this chemical for one week and were injected with subcurative doses of foudadin, the schistosomes disappeared from the mesenteric veins and in many cases from the portal veins also. It is suggested that this compound may act synergistically with subcurative doses of antimonials. R.T.L.

45—Queensland Agricultural Journal.

- a. ROBERTS, F. H. S., 1947.—“Sodium fluoride—a new treatment for large roundworms in pigs.” 64 (1), 50–52.

(45a) Commercial sodium fluoride, containing 70% to 80% pure sodium fluoride, is safe and probably more so than oil of chenopodium or phenothiazine for roundworms in pigs. It should be used cautiously for breeding sows. The worms may not be passed before the 3rd or 4th day and the action not complete until the 8th or 9th day. A group of 10 pigs, 41–60 lb. in weight, will require 70 gm. or 2½ oz. of sodium fluoride mixed with 20 lb. of dry mash. With large animals the dose should be divided and given morning and evening. Some danger from fluorosis may eventually arise after several treatments unless the ration is high in calcium. R.T.L.

46—Revista Brasileira de Biologia.

- a. FREITAS, J. F. TEIXEIRA DE & LENT, H., 1947.—“Revisão da subfamília Deletrocephalinae Railliet, 1916 (Nematoda, Strongyloidea).” 7 (1), 73–100.

(46a) The subfamily Deletrocephalinae comprises the genera *Deletrocephalus* Diesing, 1851, of which there are two species, *D. dimidiatus* Diesing, 1851 and *D. cesarpintoi* Vaz, 1936, and a new genus *Paradeletrocephalus* which is created for *D. dimidiatus* var. *minor* Molin, 1861. The three species of the subfamily are illustrated and described. Among the characters which distinguish the new genus are longitudinal striation of the buccal capsule and absence of striation of the external coronal elements. R.T.L.

47—Science.

- a. BRANDT, J. L., 1947.—“An operative approach to the treatment of schistosomiasis mansoni infections.” 105 (2722), 239–240.
b. VAN CLEAVE, H. J. & ROSS, J. A., 1947.—“A method for reclaiming dried zoological specimens.” 105 (2725), 318.
c. SCOTT, J. A., 1947.—“Production of quantitative infections with the filariae of the cotton rat.” 105 (2730), 437.
d. WELCH, A. D., PETERS, L., BUEDING, E., VALK, Jr., A. & HIGASHI, A., 1947.—“A new class of antifilarial compounds.” 105 (2732), 486–488.

(47a) By the use of heparin a far greater number of adult *Schistosoma mansoni* could be recovered post mortem from livers of experimentally infected animals. It proved possible also to aspirate the portal veins of heparin-treated rabbits and monkeys and keep the animals alive. On the basis of these experiments it is suggested that heparin might be used therapeutically to immobilize adult schistosomes and concentrate them in the portal vein and liver, to be followed by the injection of anthelmintics directly into the portal vein. R.T.L.

(47b) Commercial grade trisodium phosphate 0.25% to 0.5% in distilled water is effective in restoring dried zoological specimens. Relatively large nematodes reclaimed by this method, when stained and mounted, showed details of buccal armature, form and structure of the oesophagus and pharynx and details of the uterine coils. R.T.L.

(47c) A simple technique is described whereby infections with a known number of larvae of *Litomosoides carinii* can be obtained from *Liponyssus bacoti* for studies in chemotherapy, changes of susceptibility with advancing age and other phases of immune response. R.T.L.

(47d) Certain cyanine dyes proved completely curative when injected intraperitoneally into cotton rats infected with *Litomosoides carinii*. One, Chemotherapy Center No. 363, was

outstanding. Infected cotton rats were almost invariably cured when this compound was given intravenously in doses of 1 mg./kg., repeated 3-6 times at intervals of 1, 3 or even 7 days. The only evidence of chronic toxicity was a mild and reversible renal damage in experimental animals. In man there is only mild hypotension and tachycardia of a transient character. Further studies are now required to determine whether sterilization or death of the parent worms had resulted.

R.T.L.

48—Scottish Agriculture.

- a. ROBERTSON, D., 1947.—“Control of tomato root eelworms.” 26 (3), 160-162.

(48a) In a glasshouse with a sandy loam soil heavily infested with both *Heterodera marioni* and *H. rostochiensis*, Robertson applied D-D mixture (dichloropropane and dichloropylene) at the rate of 400 lb. per acre, in holes 8 inches deep and 12 inches apart. Four plots were treated, 2 being rolled and 2 raked after treatment, and 4 similar plots, all 8 by 2 yards, were untreated. Ailsa Craig tomatoes were planted 3 weeks later. On the control plots the plants grew to a height of 4 feet, the roots were heavily infested with both eelworms, and a total of 733 lb. of fruit was gathered. On the treated plots the plants averaged 8 feet high; there was no sign of root knot and very few eelworm cysts on the roots. The total yield was 1,238 lb. of which 728 lb. came from the 2 rolled and 510 lb. from the 2 raked plots. The flavour of the fruit was normal. The increased yield would have a cash value of 8/- per square yard and the treatment cost 3½d. per square yard. Eelworm cysts from the control plots had 96.5% of viable eggs as compared with 65% from the treated plots. There were also fewer cysts in the latter (1.8 as compared with 8.8 per gram of soil) so that the total viable eggs per gram of soil was 10 times greater in the control than in the treated plots. The author states that it is unsafe to draw definite conclusions from an experiment of this size and that further investigation is needed on the residual effects of D-D, but it appears to be an effective fumigant for controlling *H. marioni* and, to a lesser extent, *H. rostochiensis* on tomatoes (in glasshouses). M.T.F.

49—Southern Seedsman. Texas.

- a. ANON, 1947.—“Westan: nematode-resistant lima bean from California.” 10 (1), 44.

(49a) Mention is made of “Westan”, a “baby lima” bean resistant to root-knot nematode, which originated in West Stanislaus County, California. It is also highly resistant to wireworm and is a heavy yielder.

T.G.

50—Tijdschrift over Plantenziekten.

- a. DIJKEMA, L. R., 1947.—“Eenige waarnemingen met betrekking tot eenzijdige graanbouw.” 53 (1), 16-18. [English summary p. 18.]

(50a) Dijkema reports that in the Wieringermeerpolder, which was reclaimed about 1930, there has occurred since 1943 severe injury to cereal crops due to the nematode, *Heterodera avenae* Filipjev. In one case 8 cereal crops were grown during 13 years and in another, 8 cereals in 12 years. This crop rotation with so many cereals has encouraged the increase of the parasite, and crop rotations with fewer cereals are being recommended.

T.G.

51—Transactions of the American Microscopical Society.

- a. CROSS, J. B. & SCOTT, J. A., 1947.—“The developmental anatomy of the fourth stage larvae and adults of *Litomosoides carinii*, a filarial worm of the cotton rat.” 66 (1), 1-21.
 b. KUNTZ, R. E., 1947.—“Effect of light and temperature on emergence of *Schistosoma mansoni* cercariae.” 66 (1), 37-49.
 c. RAUSCH, R., 1947.—“Some observations on the host relationships of *Microphallus opacus* (Ward, 1894) (Trematoda: Microphallidae).” 66 (1), 59-63.

(51a) The use now being made of *Litomosoides carinii* for the testing of drugs has made desirable this detailed study of the anatomy of the larval and adult stages. It has been found that females can attain sexual maturity when they have reached only 40% of the length of fully grown specimens. The position of the vulva, the structure of the mouth, and the number of

caudal papillae are unreliable differential characters. Vacuolation in the uteri, resembling that recorded in *Dirofilaria immitis* after chemotherapy, can be produced artificially in *L. carinii*. Spontaneous herniation in the females follows not only on slight pH changes but also after gentle handling. The youngest worms, although anatomically distinct, were no larger than the larvae. The moult from the 4th stage to adult form occurred in both sexes when the worms were about 7 mm. long.

R.T.L.

(51b) Abrupt changes in temperature exercise more influence than abrupt changes in light intensity on the emergence of cercariae of *Schistosoma mansoni* from *Australorbis glabratus*. The cercariae can be induced by bright light and elevated temperatures to emerge either three times during one day or in moderate numbers daily for a period of 5-9 days. The amount of organic debris in the water containing the snails has little or no effect on the number of cercariae produced.

R.T.L.

(51c) *Microphallus opacus* failed to reach sexual maturity in Amphibia. In certain Reptilia some metacercariae became mature in nine days. Attempts to infect chickens were unsuccessful. Mature trematodes were found in opossums and raccoons in about 32 hours. Egg production was much more abundant in reptilian and mammalian hosts, but infection lasted longer in reptiles and fishes, indicating that cold-blooded animals are probably the normal hosts. R.T.L.

52—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. BERTRAM, D. S., 1947.—“Methods employed in investigations on the transmission of *Litomosoides carinii* by *Liponyssus bacoti*.” [Demonstration.] 40 (4), 370.
- b. WATSON, J. M. & MacKEITH, R. C., 1947.—“The diagnosis of threadworms.” [Demonstration.] 40 (4), 376-377.
- c. WILLIAMS, F. E., 1947.—“The complement fixation reaction in Asiatic schistosomiasis employing cercarial antigen (*Schistosoma spindale*).” 40 (4), 421-434.
- d. STEPHENSON, R. W., 1947.—“Bilharziasis in the Gezira irrigated area of the Sudan.” 40 (4), 479-494.

(52c) Using an alcoholic extract of the livers of *Planorbis exustus* infected with *Schistosoma spindale*, which had been prepared 18 years previously in India, complement-fixation tests were made on 560 members of the R.A.A.F. exposed to infection with *S. japonicum* at Leyte. The test proved of great value in diagnosis, less tedious and more sensitive than repeated stool examination for ova. The results are analysed in detail in a series of tables. Ova were found in 5 cases only out of 391 individuals whose sera were negative. Of 365 individuals who had not received treatment and were not considered to be infected, 34 yielded a positive reaction and 27 showed ova in the faeces; of the latter 26 gave a positive reaction.

R.T.L.

(52d) An investigation into the position of bilharziasis in the years 1942, 1944 and 1945 in the Gezira irrigated area of the Sudan revealed that considerable deterioration had taken place. *S. haematobium* was found in about 20% of the adults and 45% of the children in the area. *S. mansoni* is known to be widespread and to have a fairly high incidence in certain places. The author is of the opinion that the antibilharzia measures undertaken with the object of forestalling an increase in bilharzia incidence, anticipated in connection with the initiation of perennial irrigation in 1925, have failed to achieve that object, and that the rise in incidence is likely to be increasingly rapid in the near future. Future measures must be directed against the snail population in the canals and to this end the first step must be a great reduction of the weed growth. In order to evaluate future measures of control an ecological study of bilharzial snails in the endemic areas is recommended.

J.J.C.B.

53—United States Naval Medical Bulletin.

- a. MONAT, H. A. & COOPER, I. S., 1947.—“Duodenal ulcer and hookworm infestation: diagnostic and military medico-legal problem.” 47 (2), 338-342.

(53a) Duodenal ulcer and duodenitis may be simulated by hookworm infection. X-ray studies of the duodenal cap should be continued for 4-6 weeks after disappearance of hookworm eggs from the faeces as a result of treatment, before it can be certain that a concurrent duodenal

ulcer is not present. The medico-legal aspect is important as persons in the U.S. Navy with disability from duodenal ulcer may be entitled to pension. R.T.L.

54—Veterinary Medicine.

- a. KAPLAN, M. M. & SAKELLARIOU, S., 1947.—“The effect of hexachlorethane-bentonite suspension on the lancet fluke, *Dicrocoelium lanceolatum*.” 42 (1), 23–24.
- b. MÓRCOS, Z., 1947.—“Prevalent diseases of race horses in Egypt. Conclusion of 1927–1947 observations.” 42 (3), 94–97.
- c. ANON, 1947.—“Swine parasites and parasitisms.” 42 (3), 105–107.
- d. OTTO, G. F. & MAREN, T. H., 1947.—“Possible use of an arsenical compound in the treatment of heartworm in dogs.” 42 (4), 128.
- e. CARNES, J. F., 1947.—“Field observations of canine filariasis.” 42 (4), 159–160.

(54a) Treatment with 30 c.c. of hexachlorethane-bentonite water suspension, prepared by Olsen's method and containing 15 gm. of hexachlorethane, killed all the *Dicrocoelium dendriticum* and immature *Fasciola hepatica* in 4 massively infected sheep. R.T.L.

(54b) Morcos, of the Cairo Veterinary College, says that ascarids and strongyles are the commonest intestinal parasites of race-horses in Egypt and that a satisfactory treatment is a drench of turpentine, ammonium carbonate and linseed oil which may be repeated 10 days later. R.T.L.

(54d) Adult *Dirofilaria immitis* in dogs were killed by daily doses for 15 days of 1 mg. per kg. body-weight of a new compound, *p*-[bis-(carboxymethylmercapto)-arsino]-benzamide in 2% solution, but the microfilarial blood level was not reduced. This compound is well tolerated in daily doses far in excess of the therapeutic dose and is without discernible ill-effects on dogs in daily doses up to 4.5 mg. per kg. for 42 days. None of the dogs treated showed symptomatic disturbances, but on necropsy in some cases appreciable gross pulmonary lesions had resulted from blockage of the pulmonary arterioles by the dead worms. R.T.L.

(54e) Fouadin injected intramuscularly into dogs infected with *Dirofilaria immitis* resulted in the disappearance of microfilariae from the peripheral blood in 45 days. For dogs weighing between 50 lb. and 60 lb. a dose of 2 c.c. was given daily for six days. If oedematous swelling appeared the daily dose was omitted and from the following day a dose of 2.5 c.c. was given daily for another six days. In a few cases there were systemic reactions, keratitis, anorexia and marked dyspnoea. R.T.L.

55—Veterinary Record.

- a. OLDHAM, J. N., 1947.—“Infestation of suckling puppy with round worms.” 59 (7), 83–84.
- b. LAPAGE, G., BLAKEMORE, F. & WORTLEY, W. H., 1947.—“Treatment of fascioliasis of cattle and sheep with a suspension of hexachlorethane and bentonite.” 59 (13), 176–177.
- c. LEIPER, J. W. G., 1947.—“The recurrence of nematode infections on ‘rested’ pastures.” 59 (19), 255.

(55b) One of the few endemic centres for *Fasciola hepatica* in East Anglia is the Waveney Valley where, during the winter 1946 to 1947, the incidence of this infection particularly in cattle has been very high. Olsen's method of preparing suspensions of hexachlorethane was adopted [see Helm. Abs., 15, No. 74b]. Fourteen extremely emaciated cattle and twelve sheep in poor condition were treated. The egg counts were considerably reduced. The authors recommend that treatment be given at least twice, once in late autumn and again during the early months of the year. R.T.L.

(55c) From the experimental data tabulated, it appears that wild rabbits can mechanically convey the larvae of gastro-intestinal nematodes of sheep to rested pastures from adjoining infected pastures, as well as reinfect them with trichostrongyles from their own faeces. J.W.G.L.

NON-PERIODICAL LITERATURE.

- 56—ANON, 1947.—“Common names of British insect and other pests. Part I. Slugs and snails : eelworms : beetles : flies : sawflies, wasps and related insects.” Association of Applied Biologists, 30 pp.

- 57—EGYPT, MINISTRY OF PUBLIC HEALTH, 1947.—“Bilharzia Snail Destruction Section. 3rd Annual Report, 1944–1945.” Cairo, 28 pp.

Satisfactory progress is reported of the snail destruction campaign in the Fayoum and in Giza Province, and an account is given of the results of a survey and treatment of streams in Dakhla Oasis. Conforming with the six-year plan outlined in the 1943 report [see Helm. Abs., 15, No. 67], the work has now been extended to the Aswan Province. In research it has been shown that during the “winter closure” a high percentage of infected snails die, and that during hibernation there is a retardation of the intra-molluscan development of the parasite. The treatment of hibernating snails with copper sulphate is slightly less effective than of actively thriving snails, but this difference is less marked in *Planorbis* than in *Bulinus*. J.J.C.B.

- 58—EGYPT, MINISTRY OF PUBLIC HEALTH, 1947.—“Bilharzia Snail Destruction Section. 4th Annual Report, 1945–1946.” Cairo, 28 pp.

The Snail Destruction Section reports improved organization and control during 1945 to 1946 in all the provinces embraced by the campaign. The course of the campaign up to 1946 in the Fayoum and Giza is illustrated graphically as the ratio of streams infested to streams surveyed, and shows reductions from 25% to 2% in Fayoum and from 39% to 12% in Giza. The campaign in the oases continues actively and now includes Bahariya and Kharga. In research, the relation of age of cercariae to power of penetration has been investigated. Exposure of experimental animals to cercariae of *Schistosoma haematobium* resulted in successful infection of all the animals with cercariae of varying ages up to 24 hours. Cercariae aged 30 hours produced male worms only and no infection resulted from exposure to cercariae aged 48 hours. The action of various chemicals, viz., “Methoxone” in liquid and in powder form, pure caustic potash, lime, bleaching powder, and D.D.T. was tested on snails and/or Potamogeton and the results are described. Taking into consideration the local cost of these agents, it is concluded that no advantage would be gained by substituting any of them for copper sulphate. J.J.C.B.

- 59—HARTSUIJKER, K., 1947.—“The sugarbeet eelworm in Holland.” Congrès de l'Institut Internationale de Recherches Betteravières, 10th, Brussels, 2nd–5th February, 1947. Typescript 8 pp. [In English.]

Hartsuijker sketches briefly the work done in Holland from 1940 to 1946 on the sugar-beet eelworm, most of it by the late J. J. A. Hellinga. He gives the distribution of the parasite in Holland. The oat root eelworm is often present as well. All chenopods and crucifers tested were attacked and also rhubarb and phaseolus beans, the latter not very heavily. On sugar-beet sometimes 2 generations were produced in a year, at others development went on throughout the season. Control by trap plants and enemy plants was investigated but is considered impracticable. Inundation of infested land by salt water for up to 16 months did not destroy the eelworm. No resistance was shown by the 3 varieties of beet commonly grown in Holland. Much work was done in estimating the infestation of samples of soil and advising farmers on cropping, and this is continuing. M.T.F.

60—OPINIONS AND DECLARATIONS RENDERED BY THE INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE.

- a. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1947.—“Opinion 16. The status, under rule (d) in Article 30, of a pre-binomial specific name, published prior to 1758, in relation to a generic name published on, or before, 31st December 1930.” 1 (25), 257–271.
- b. HEMMING, F., 1947.—“Note 7. On an error, due to the non-observance of the provisions of Opinion 16, contained in the portion of Opinion 84, in which the name *Taenia* Linnaeus, 1758 (Class Cestoidea), was placed on the Official List of Generic Names in Zoology and on the remedial action proposed.” 1 (25), 297–302.

(60a) The official summary of Opinion 16 is as follows: “In deciding whether a case of absolute tautonymy is present (under rule (d) in Article 30), in relation to a generic name

published on, or before, 31st December 1930, the citation of a clear pre-binomial specific name in synonymy is to be construed as complying with the demands of rule (d) in Article 30."

R.T.L.

(60b) Apparently *Taenia solium* was erroneously selected as type of the genus *Taenia*. If the International Rules of Zoological Nomenclature were strictly applied *Dibothriocephalus latus* should be the type of *Taenia*. It is therefore proposed to invoke the plenary powers of the International Commission to suspend the Rules for *Taenia* for the purpose of fixing irrevocably *Taenia solium* as type of this genus.

R.T.L.

61—KAUPP, B. F. & SURFACE, R. C., 1947.—"Poultry sanitation and disease control. The complete guide to sanitation and treatment of disease." Minneapolis, 3rd edit., 485 pp. 25s.